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225 Reinekers Lane
Suite 400
Alexandria, VA 22314

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in the following listed application(s) or patent(s) for which the issue fee has been paid.

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Respectfully Submitted,



Mark J. Murphy
Registration No. 34,225
Date: August 28, 2009

COOK ALEX Ltd.
200 West Adams Street
Suite 2850
Chicago, Illinois 60606
(312) 236-8500

Customer No: 26568



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(12) **United States Patent**
Takahashi

(10) **Patent No.:** US 7,554,263 B2
(45) **Date of Patent:** Jun. 30, 2009

(54) **LIGHT EMITTING DEVICE HAVING
TRANSPARENT FILM VARYING
REFRACTIVE INDEX AND
MANUFACTURING METHOD THEREOF**

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(75) **Inventor:** Masahiro Takahashi, Kanagawa (JP)

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(73) **Assignee:** Semiconductor Energy Laboratory
Co., Ltd. (JP)

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(*) **Notice:** Subject to any disclaimer, the term of this
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Tang, C.W. et al, "Organic Electroluminescent Diodes," Appl. Phys. Lett., vol. 51, No. 12, pp. 913-915, Sep. 21, 1987.

(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

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Primary Examiner—Sikha Roy

(74) Attorney, Agent, or Firm—Cook Alex Ltd.

(52) **U.S. Cl.** 313/506; 313/504; 313/512;
428/690; 428/917; 257/100

(57) **ABSTRACT**

(58) **Field of Classification Search** 313/506
See application file for complete search history.

A method for manufacturing a light emitting device with higher light extraction efficiency, lower consumption, longer operation life, and higher reliability can be provided. The light emitting device of the present invention comprises a substrate having an insulating surface, a transparent film formed over the substrate having the insulating surface, a first electrode formed over the transparent film, a layer including an organic compound formed over the first electrode, and a second electrode formed over the layer including the organic compound, wherein the refractive index of the transparent film sequentially varies from an interface at the side of the substrate having the insulating surface to an interface at the side of the first electrode.

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18 Claims, 11 Drawing Sheets

